Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band	)	ET Docket No. 13-49

COMMENTS OF GENERAL MOTORS COMPANY

General Motors Company respectfully submits these comments in response to the Federal Communication Commission's Office of Engineering and Technology's *Public Notice* seeking comment on the Phase I test report, released on October 29, 2018.[1]

I. INTRODUCTION AND SUMMARY

General Motors ("GM") is committed to a future of zero crashes, zero emissions, and zero congestion. As part of this vision, GM has made significant investments and advances in Vehicle to Vehicle (V2V) and Vehicle to Everything (V2X) which are expected to significantly enhance road safety and save thousands of lives.

As the recent Department of Transportation federal guidance on automated vehicles recognizes:

"Throughout the Nation there are over 70 active deployments of V2X communications utilizing the 5.9 GHz band. U.S. DOT currently estimates that by the end of 2018, over 18,000 vehicles will be deployed with aftermarket V2X communications devices and over 1,000

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[1] *Office of Engineering and Technology Requests Comments on Phase I Testing of Prototype U-NII-4 Devices*, Public Notice, ET Docket No. 13-49, DA 18-1111 (Oct. 29, 2018).

infrastructure V2X devices will be installed at the roadside. Furthermore, all seven channels in the 5.9 GHz band are actively utilized in these deployments.[2]"

We are pleased to see Phase I testing results, and strongly support the continuation of Phase II and Phase III testing. Testing should be completed before any unlicensed use of the 5.9 GHz band is contemplated. Further, GM urges that the full 5.9 GHz safety band should be dedicated to vehicle safety technologies with the potential to help prevent a large part of the 37,133 deaths on U.S. roadways last year alone.

II. AUTOMAKERS RECOGNIZE THE LIFE-SAVING ROADWAY SAFETY BENEFITS OF V2X AND ARE INVESTING IN AND DEPLOYING THE TECHNOLOGY.

GM was first to market, deploying DSRC-based V2V on its Cadillac CTS in 2017. In June 2018, GM announced it will build V2V on-board units into a high-volume Cadillac crossover beginning in 2023, and expand the deployment to all Cadillac models thereafter.[3] The planned expansion of V2V communications to all Cadillac vehicles underscores the importance of ensuring that automakers have access to spectrum sufficient to support their growing needs. GM's V2V technology currently relies on DSRC and will utilize the entire 5.9 GHz band to communicate between cars, roadway infrastructure, others sharing the roadway, including heavy duty trucks, bicycles and motorcycles and pedestrians to bring next-generation automotive safety to drivers everywhere.

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[2] U.S. Department of Transportation, *Automated Vehicles 3.0: Preparing for the Future of Transportation* 14 (Oct. 2018), https://www.transportation.gov/sites/dot.gov/files/docs/policyinitiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf (Automated Vehicles 3.0).

[3] Press Release, "Cadillac to Expand Super Cruise Across Entire Lineup," (June 6, 2018), http://media.cadillac.com/media/us/en/cadillac/news.detail.html/content/Pages/news/us/en/2018/jun/0606-its-cadillac.html; Letter from Paul Hemmersbaugh, Chief Counsel and Policy Director, Transportation as a Service, GM to FCC Secretary Marlene H. Dortch, ET Docket No. 13-49 (July 13, 2018) ("GM's V2X technology relies on DSRC and the entire 5.9 GHz band to communicate between cars and roadway infrastructure and to bring next-generation automotive safety to drivers everywhere.")

In April of this year, Toyota announced that it would deploy DSRC-based V2V in all Toyota and Lexus vehicles beginning in 2021[4]. Further, State and City DOTs and industry partners recognize the lifesaving potential of Intelligent Transportation Systems ("ITS"). As NHTSA outlined in Automated Vehicles 3.0, "Over 200 infrastructure communications devices are already deployed with over 2,100 planned by 2020 under this initiative in 26 States and 45 cities with a total investment of over $38 million."

Companies, cities, and the government are investing heavily in the development and deployment of V2X technology. These deployments and investments may be undermined if unlicensed use is permitted on the 5.9 GHz before sufficient testing is completed to determine conclusively if such use does not cause harmful interference to operations of the incumbent V2X technology.

III. PRESERVE THE ENTIRE SAFETY BAND FOR V2X SERVICES

In addition to the investment and advances in DSRC technologies, other V2X technologies such as cellular V2X (C-V2X) have begun to emerge and are being developed globally. While these new technologies show promise, there has not been rigorous testing of these solutions to determine if they can be used for the safety critical V2X applications. Thus, at this time, DSRC-based V2X remains the only proven technological solution and is the appropriate technology to use to test whether spectrum sharing with unlicensed WIFI can work. Protecting the entire 5.9 GHz band for transportation safety applications is critical to achieve the full benefits of these communication technologies in the years to come and necessary to further progress this potentially lifesaving technology.

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[4] Press Release, "Toyota and Lexus to Launch Technology to Connect Vehicles and Infrastructure in U.S. in 2021" (Apr. 16, 2018), http://corporatenews.pressroom.toyota.com/releases/toyota+and+lexus+to+launch+technology+connect+vehicles+infrastructure+in+u+s+2021.htm.

Both IEEE 802.11p-based radio DSRC/ITS-G5 and 3GPP based C-V2X have the potential to save lives, and the automobile industry continues to develop the technologies and explore interoperable safety applications for more vehicles on U.S. roadways.

The FCC designed the 5.9 GHz band for DRSC-based intelligent transportation systems ("ITS") to increase traveler safety, reduce fuel consumption and pollution, and continue to advance the nation's economy."[5] Today, V2X technology is designed to meet all the objectives identified in the Allocation Order related to roadway safety and will continue to advance these goals.

IV. THREE PHASES OF THE TEST PLAN MUST BE COMPLETED

Currently, pursuant to the negotiated agreement of all stakeholders, including the unlicensed WiFi community, the FCC, in close coordination with the Department of Transportation ("DOT") and the National Telecommunications and Information Administration ("NTIA") are testing and modeling to ensure appropriate interference avoidance and spectrum rights allocation in the 5.9 GHz band. Further, the DOT in coordination with the FCC is testing DSRC technology, vehicle safety testing, and DSRC capabilities testing. While Phase I testing is complete, that testing was limited to testing at the FCC Laboratory in Columbia, Maryland.

Phase II testing which will involve basic field tests with a few vehicles at a DOT facility will determine whether the techniques to avoid interference that were evaluated in Phase I's lab tests are effective in the field. Phase III testing will involve tests with more vehicles, more devices, and real-world scenarios. All three phases are necessary to establish whether these technologies can be effective in the real world. A failure to make this determination could undermine the effectiveness of the whole system and potentially result in unnecessary crashes and losses of lives.

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[5] *Amendment of Parts 2 & 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Serv. for Dedicated Short Range Commc'ns of Intelligent Transportation Servs.*, Report and Order, 14 FCC Rcd 18221, ¶ 5 (1999) ("*Allocation Order*").

In a letter to Senator Thune from September 9, 2015, the DOT, the Department of Commerce (Department), and the FCC stated that:

> *"The three phases of the test plan are interdependent. It is, therefore, imperative - to ensure the future automotive safety and efficiency of the traveling public - that all three phases of the FCC test plan be completed before reaching any conclusions as to whether unlicensed devices can safely operate in the 5.9 GHz band.*[6]*"*

We respectfully reiterate that it is imperative that real-world testing is completed before reexamining the 5.9 GHz band and of considering reallocation of any spectrum for unlicensed use, as this could cause harmful interference to critical lifesaving technologies. Sharing the 5.9GHz band with unlicensed devices should only be considered if testing shows spectrum sharing will not interfere with V2X lifesaving technology.

V. CONCLUSION

As NHTSA has explained, "the greatest gains in highway safety in coming years will result from broad-scale application of crash *avoidance* technologies along with continued improvements in vehicle crashworthiness that can reduce fatalities and injuries.[7]"

This is an unprecedented time for the advancement of crash avoidance and automated driving systems that have the potential to make our roadways safer. As the FCC examines the 5.9 GHz band, we implore the Agency to consider the 37,133 deaths on U.S. roadways last year alone, and "*we urge the FCC to preserve the entire 5.9 GHz band for transportation safety applications. Any unlicensed use in the band should be done without harmful interference to the incumbent technology or other intelligent transportation systems technologies.*[8]*"* GM strongly agrees with

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6 Letter to Senator Thune, file:///C:/Users/tz9jc8/Downloads/DOC-337251A1.pdf

7 *Federal Motor Vehicle Safety Standards*, Notice of Proposed Rulemaking, 82 Fed. Reg. 3854, 3860 (2017) ("*NHTSA V2V NPRM*")

8 Press Release, "Multi-stakeholder Statement on Preserving the 5.9GHz Band." (Oct. 24, 2018), https://autoalliance.org/2018/10/24/multi-stakeholder-statement-preserving-5-9ghz-band/

the DOT and NHTSA that, "The three phases of the test plan are interdependent and ongoing, and the testing will show whether unlicensed devices can safely operate in the 5.9 GHz band. With lifesaving safety capabilities at stake, the Department maintains that all three phases of research must be completed before any decisions about spectrum reallocation can be made."[9]

Respectfully Submitted,

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[9] *U.S. Department of Transportation's National Highway Traffic Safety Administration issues statement on safety value of 5.9 GHz spectrum*, October 14, 2018 (https://www.nhtsa.gov/press-releases/us-department-transportations-national-highway-traffic-safety-administration-issues)